



NIPPON VALVE CONTROLS, INC.

Instruction manual

Electric Actuated Ball Valve MS MH H HH

SP-1519

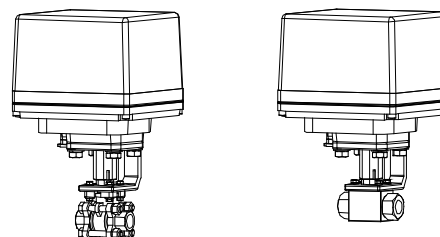
Please read this manual before installation and use.

GENERAL

Threaded-end ball valve with high-power electric actuator.

Actuator

- AD1 : For AC power
- AD2 : For AC / DC power
- AD0 : For DC power
- HD1 : For AC power (High speed)
- HD2 : For AC / DC power (High speed)
- HD0 : For DC power (High speed)
- AE1 : For AC power
- AE2 : For AC / DC power



Valve

- MS type 3 piece / For heavy load.
- MH type 3 piece / For high pressure.
- H type For high pressure.
- HH type For ultra-high pressure.

PRODUCT CODE

MS type	<input type="text"/>	<input type="text"/>	M S	<input type="text"/>	<input type="text"/>	5	U	U	P	-	<input type="text"/>	<input type="text"/>	<input type="text"/>
MH type	<input type="text"/>	<input type="text"/>	M H	<input type="text"/>	<input type="text"/>	5	U	U	<input type="text"/>	-	<input type="text"/>	<input type="text"/>	<input type="text"/>
H type	<input type="text"/>	<input type="text"/>	H -	<input type="text"/>	<input type="text"/>	5	<input type="text"/>	U	D	-	<input type="text"/>	<input type="text"/>	<input type="text"/>
(Standard port)	<input type="text"/>	<input type="text"/>	H -	<input type="text"/>	<input type="text"/>	5	<input type="text"/>	U	D	R	0	3	2
HH type	<input type="text"/>	<input type="text"/>	H H	<input type="text"/>	<input type="text"/>	5	S	U	<input type="text"/>	-	<input type="text"/>	<input type="text"/>	<input type="text"/>
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)		(9)		(10)	

- (1) Actuator
AD1 AD2 AD0
HD1 HD2 HD0
AE1 AE2

- (2) Valve
MS MH H- HH

- (3) Voltage
1 : 100 / 110 V AC
2 : 200 / 220 V AC
0 : 24 V DC

- (4) Sizing code
0 : Standard
1 : Light
2 : Heavy

- (5) Connection
5 : Threaded End Rc

- (6) Body material
U : SCS14A / SUS316Ti
S : Carbon steel









- (7) Ball material
U : SCS14A / SUS316Ti

- (8) Seat material
P : R-PTFE
D : POM
R : R-F-PTFE
K : PEEK








- (9) Size [mm]
ex. 25 A → 025

- (10) Option
L0 : Auxiliary limit switch
L2 : Auxiliary limit switch
M0 : Manual lever handle

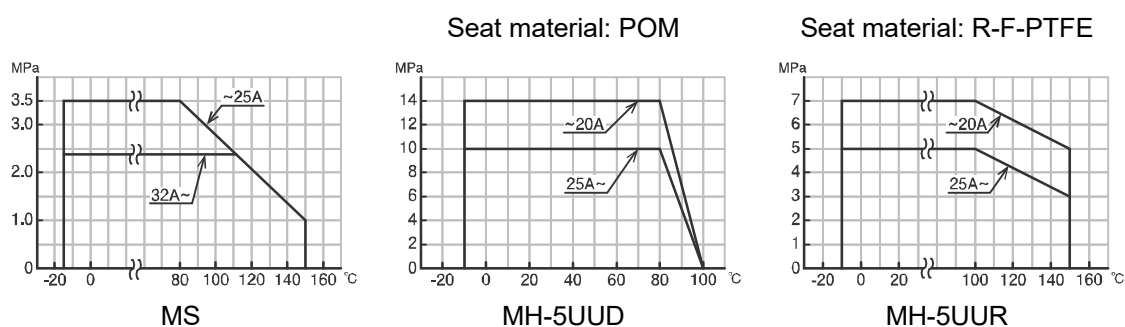
VALVES SPECIFICATIONS

 Water
  Oil
  Air, Gas
  Steam
  Chemicals
  Sea water
  Slurry
  Negative pressure








MS MH type

Valve type		MS		MH		
Design		2-way, Full port		2-way, Full port		
Connection		Threaded End Rc		Threaded End Rc		
Fluid		   		  		
Max pressure		3.5 MPa	2.4 MPa	14 MPa	10 MPa	7 MPa
Size [mm]		010 to 025	032 to 050	010 to 020	025 to 040	010 to 020
Material	Body	SCS14A		SCS14A		
	Ball	SCS14A		SCS14A (HCr plated)		
	Seat	R-PTFE		POM		R-F-PTFE
Stem seal	Packing	R-PTFE		-		
	O-ring	FKM		FKM		





Note) It cannot be used POM seat for a water solution of more than 85 °C.

PRESSURE & TEMPERATURE RATING

VALVES SPECIFICATIONS

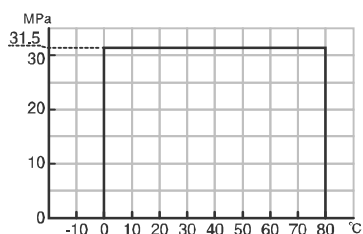
 Water
  Oil
  Air, Gas
  Steam
  Chemicals
  Sea water
  Slurry
  Negative pressure

H type

Valve type	H (Carbon steel)			H (Stainless)			
Design	2-way, Full port			2-way, Full port			
Connection	Threaded End Rc			Threaded End Rc			
Fluid	 			 			
Max pressure	31.5 MPa			31.5 MPa	30 MPa	25 MPa	31.5 MPa
Size [mm]	008 to 025	R032	040	008 to 015	020	025	R032 040
Material	Body	Carbon steel (Plated)			SUS316Ti		
	Ball	SUS316Ti (HCr plated)			SUS316Ti (HCr plated)		
	Seat	POM			POM		
Stem seal	O-ring	FKM			FKM		

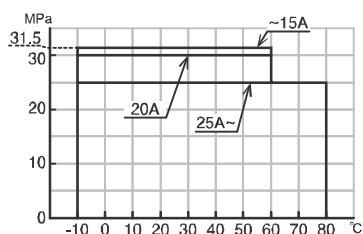
PRESSURE & TEMPERATURE RATING

Body material: Carbon steel





H-5SUD

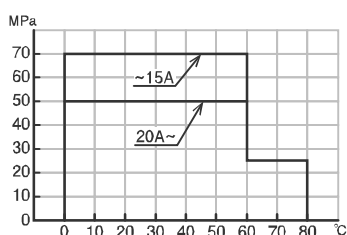
Body material: Stainless



H-5UUD

HH type

Valve type	HH		
Design	2-way, Full port		
Connection	Threaded End Rc		
Fluid	 		
Max pressure	70 MPa		50 MPa
Size [mm]	010 to 015		020 to 025
Material	Body	Carbon steel (Plated)	
	Ball	SUS316Ti (HCr plated)	
	Seat	PEEK	POM
Stem seal	O-ring	FKM	

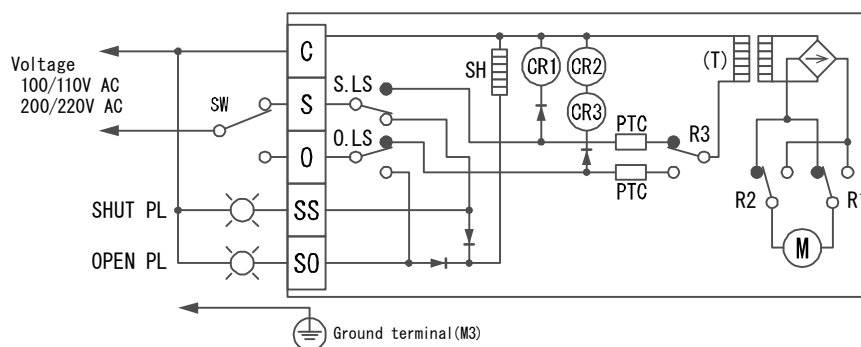
PRESSURE & TEMPERATURE RATING (HH)

ELECTRIC ACTUATOR SPECIFICATIONS

3 way valve: SHUT / Position①, OPEN / Position②

AD1 HD1 type

Actuator type (□:Voltage code)	AD1-300-□	AD1-700-□	HD1-300-□	HD1-700-□	HD1-02K-□	HD1-06K-□
Voltage	100 / 110 V AC ±10 % 50/60 Hz (Code: 1) 200 / 220 V AC ±10 % 50/60 Hz (Code: 2)					
Rated torque [N·m]	30	70	30	70	200	600
Operation time [s]	3 to 4	6 to 10	1 to 2	3 to 5	8 to 15	24 to 45
Power consumption (Max) [VA]	100		150			
Motor	DC motor					
Overload protection	Thermistor					
Method of operation	Transfer input type					
Operation	Power to S → SHUT (SHUT PL is lit.) Power to O → OPEN (OPEN PL is lit.)					
Output signal rating	Resistance load 10 A 250 V AC (Minimum 27 mA)					
Duty cycle	20 % 15 min. (When ambient temperature is over 50 °C, 10 % 15 min.)					
Ambient temperature	-20 to 55 °C					
Space heater	0.8 W					
Manual operation	Manual over-ride with clutch. (Direct operation / 06K: Operation by manual shaft.)					
Enclosure	Equivalent to IP65 (IEC 60529)					
Housing material	Aluminum alloy diecast (acrylic resin baking finish)					
Wire connection	Terminal Block: M3, Ground terminal: M3					
Conduct port	2-G1/2 Attachments: Cable gland (for Φ6 to 12 mm cable), plug.					

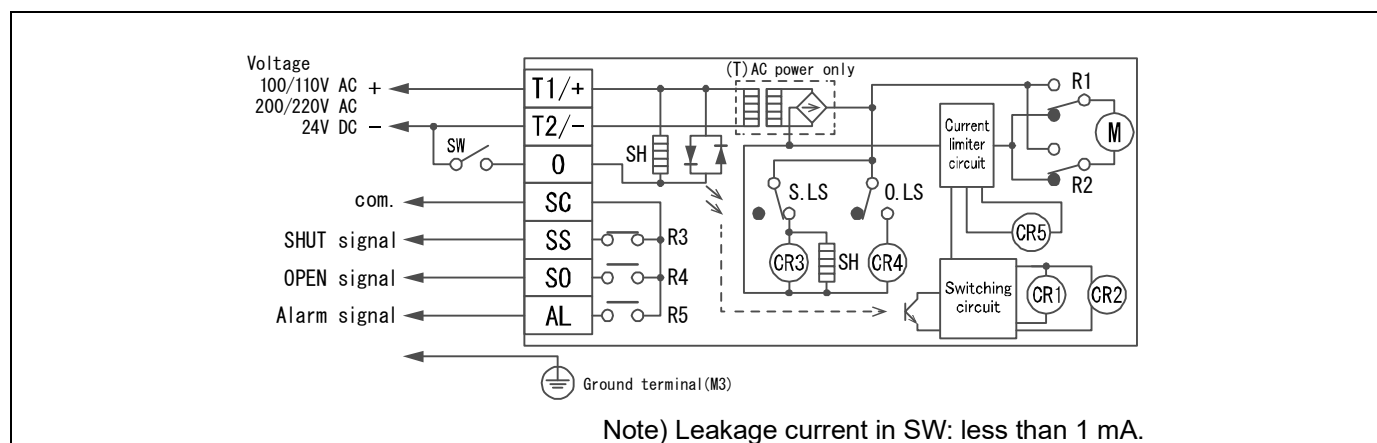
WIRING

ELECTRIC ACTUATOR SPECIFICATIONS

3 way valve: SHUT / Position①, OPEN / Position②

AD2 HD2 type

Actuator type (□:Voltage code)	AD2-300-□	AD2-700-□	HD2-300-□	HD2-700-□	HD2-02K-□	HD2-06K-□
Voltage	100 / 110 V AC ±10 % 50/60 Hz (Code: 1) 200 / 220 V AC ±10 % 50/60 Hz (Code: 2) 24 V DC (Code: 0)					
Rated torque [N·m]	30	70	30	70	200	600
Operation time [s]	3 to 4	6 to 10	1 to 2	3 to 5	AC: 8 to 15 DC: 12 to 17	AC: 24 to 45 DC: 36 to 50
Power consumption (Max) [VA]	AC: 100 DC: 80		AC: 150 DC: 120			
Motor	DC motor					
Overload protection	Current limiter					
Method of operation	a-contactinput type, with built-in relay					
Operation	SW is OFF → SHUT (R3 SW is ON) SW is ON → OPEN (R4 SW is ON) Over torque → R5 SW is ON					
Input signal current	10 mA 100 V AC / 6.5 mA 200 V AC / 38 mA 24 V DC (Leakage current in SW: less than 1 mA) *O terminal input: Photo coupler					
Output signal rating	Resistance load 0.5 A 125 V AC 1 A 24 V DC Micro load 1 mA 5 V DC					
Alarm signal	Output when the motor protection circuit operates by the overload. (it returns by power supply OFF or reverse operating signal)					
Duty cycle	20 % 15 min. (When ambient temperature is over 50 °C, 10 % 15 min.)					
Ambient temperature	-20 to 55 °C					
Space heater	0.8 W					
Manual operation	Manual over-ride with clutch. (Direct operation / 06K: Operation by manual shaft.)					
Enclosure	Equivalent to IP65 (IEC 60529)					
Housing material	Aluminum alloy diecast (acrylic resin baking finish)					
Wire connection	Terminal Block: M3, Ground terminal: M3					
Conduct port	2-G1/2 Attachments: Cable gland (for Φ6 to 12 mm cable), plug.					

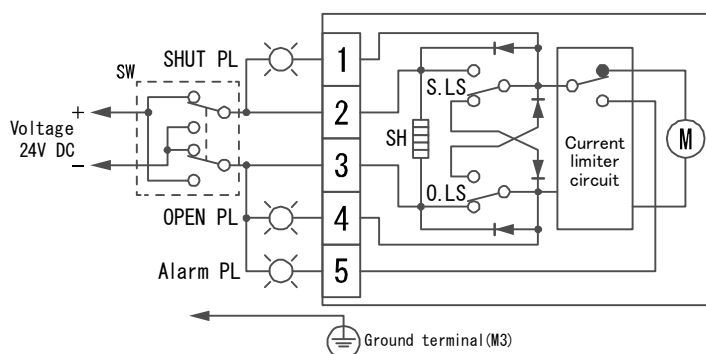
WIRING

ELECTRIC ACTUATOR SPECIFICATIONS

3 way valve: SHUT / Position①, OPEN / Position②

AD0 HD0 type

Actuator type	AD0-300-0	AD0-700-0	HD0-300-0	HD0-700-0	HD0-02K-0	HD0-06K-0
Voltage	24 V DC					
Rated torque [N·m]	30	70	30	70	200	600
Operation time [s]	3 to 4	6 to 10	1 to 2	3 to 5	12 to 17	36 to 50
Power consumption (Max) [VA]	80		120			
Motor	DC motor					
Overload protection	Current limiter					
Method of operation	Switching polarity type					
Operation	<div>2 + 3 - → SHUT (SHUT PL is lit.)</div> <div>3 + 2 - → OPEN (OPEN PL is lit.)</div> <div>Over torque → Alarm PL is lit.</div>					
Output signal rating	Resistance load 1 A to 35 mA 24 V DC					
Duty cycle	20 % 15 min. (When ambient temperature is over 50 °C, 10 % 15 min.)					
Ambient temperature	-20 to 55 °C					
Space heater	3 W		Space heater			
Manual operation	Manual over-ride with clutch. (Direct operation / 06K: Operation by manual shaft.)					
Enclosure	Equivalent to IP65 (IEC 60529)					
Housing material	Aluminum alloy diecast (acrylic resin baking finish)					
Wire connection	Terminal Block: M3, Ground terminal: M3					
Conduct port	2-G1/2 Attachments: Cable gland (for Φ6 to 12 mm cable), plug.					

WIRING

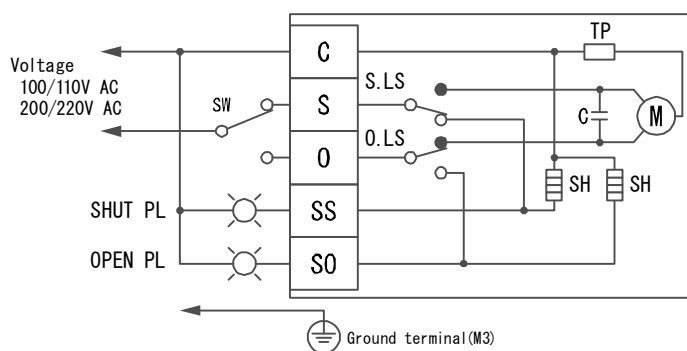
ELECTRIC ACTUATOR SPECIFICATIONS

3 way valve: SHUT / Position①, OPEN / Position②

AE1 type

Actuator type (□:Voltage code)	AE1-120-□	AE1-360-□	AE1-700-□	AE1-02K-□	AE1-06K-□
Voltage	100 / 110 V AC ±10 % 50/60 Hz (Code: 1) 200 / 220 V AC ±10 % 50/60 Hz (Code: 2)				
Rated torque [N·m]	12	36	70	200	600
Operation time [s]	10 / 8.5 (50/60 Hz)	7.2 / 6 (50/60 Hz)	15 / 12 (50/60 Hz)	30 / 25 (50/60 Hz)	
Power consumption [VA]	19	60		110	350
Motor	Synchronous motor	Reversible motor		Reversible motor self-contained mechanical brake	
Overload protection	Thermal protector				
Method of operation	Transfer input type				
Operation	Power to S → SHUT (SHUT PL is lit.) Power to O → OPEN (OPEN PL is lit.)				
Output signal rating	Resistance load 3 A 250 V AC (Minimum 0.1 A)				
Duty cycle	20 % 15 min.				
Ambient temperature	-20 to 55 °C				
Space heater	3 W				
Manual operation	Manual shaft				
Enclosure	Equivalent to IP65 (IEC 60529)				
Housing material	Aluminum alloy diecast (acrylic resin baking finish)				
Wire connection	Terminal Block: M3, Ground terminal: M3				
Conduct port	2-G1/2 Attachments: Cable gland (for Φ6 to 12 mm cable), plug.				

WIRING



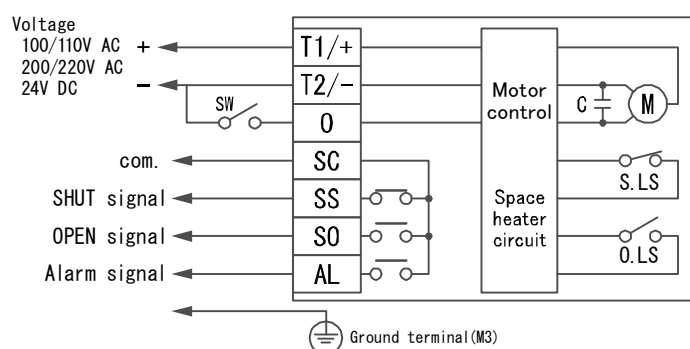
Note) Control switch should be prepared one by one for actuator.
Do not operate two or more actuator from one switch. It might malfunction.

ELECTRIC ACTUATOR SPECIFICATIONS

3 way valve: SHUT / Position①, OPEN / Position②

AE2 type

Actuator type (□:Voltage code)	AE2-120-□	AE2-360-□	AE2-700-□	AE2-02K-□	AE2-06K-□	AE2-120-0	AE2-360-0
Voltage	100 / 110 V AC ±10 % 50/60 Hz (Code: 1) 200 / 220 V AC ±10 % 50/60 Hz (Code: 2)					24 V DC (Code: 0)	
Rated torque [N·m]	12	36	70	200	600	12	36
Operation time [s]	11 / 9.5 (50/60 Hz)	8.2 / 7 (50/60 Hz)	16 / 13 (50/60 Hz)	31 / 26 (50/60 Hz)		3 to 4.5	9 to 14
Power consumption [VA]	26	60		110	350	Max 24	
Motor	Synchro- nous motor	Reversible motor		Reversible motor self-contained mechanical brake		DC motor	
Overload protection	Timer					Current limiter	
Method of operation	a-contactinput type, with built-in relay						
Operation	SW is OFF → SHUT (SHUT signal is output.) SW is ON → OPEN (OPEN signal is output.) Overtorque → Alarm signal is output						
Input signal current	9 mA (O-terminal) Leakage current in SW: less than 1 mA						
Output signal rating	Resistance load 0.5 A 125 V AC 1 A 24 V DC						
	Micro load 1 mA 5 V DC						
Alarm signal	Output when the motor protection circuit operates by the overload. (it returns by power supply OFF or reverse operating signal)						
Duty cycle	20 % 15 min.						
Ambient temperature	-20 to 55 °C						
Space heater	3 W						
Manual operation	Manual shaft						
Enclosure	Equivalent to IP65 (IEC 60529)						
Housing material	Aluminum alloy diecast (acrylic resin baking finish)						
Wire connection	Terminal Block: M3, Ground terminal: M3						
Conduct port	2-G1/2 Attachments: Cable gland (for Φ6 to 12 mm cable), plug.						

WIRING

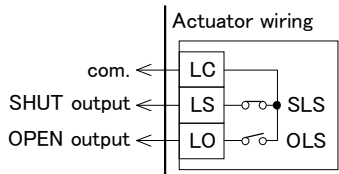
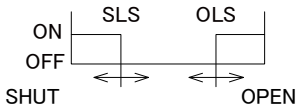
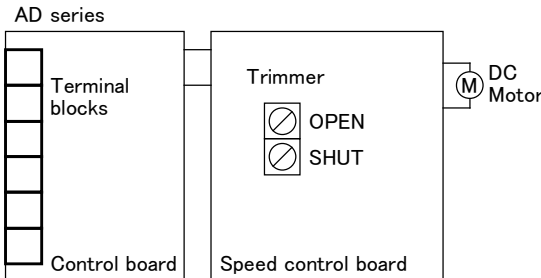
Note) Do not use control switch with current leakage (more than 1 mA) such as TRIAC or relay with CR.

ELECTRIC ACTUATOR SPECIFICATIONS**OPTIONAL PARTS**

Specifications		Code No.	AD	HD	AE	Remarks
Auxiliary limit switch	Select limit switch depending on the load	L0	○	○	○	For standard signal
		L2	○	○	○	For micro load signal
OPEN/CLOSE speed control board		I0	○			Set the operating time between 1.5 and 30 times.
Manual lever handle		M0	○	○		Mounted on the drive shaft. (except 06K)

*Auxiliary limit switch: Please refer to the specifications.

WIRING (OPTION)

L0, L2	Auxiliary limit switch	I0	Speed control board (only for AD series)
 <p>At CLOSE side, LC and LS is ON. At OPEN side, LC and LO is ON.</p>  <p>ON point can be reset by adjusting the cam.</p>		 <p>Operating speed (OPEN/CLOSE) can be adjusted by "OPEN"/"SHUT" trimmer. Turning clockwise increases the operating time.</p>	

ELECTRIC ACTUATOR SPECIFICATIONS

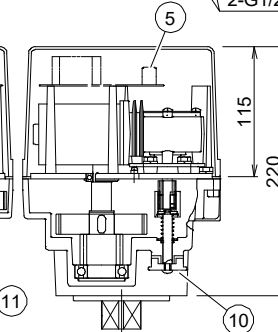
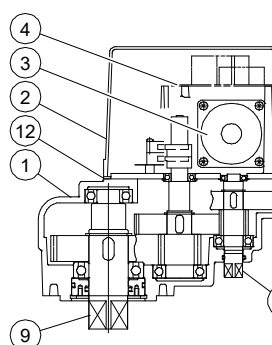
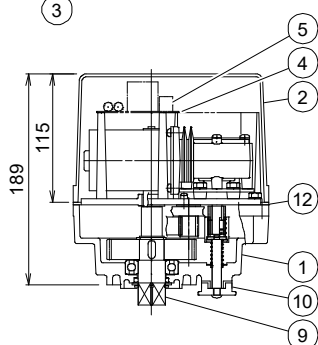
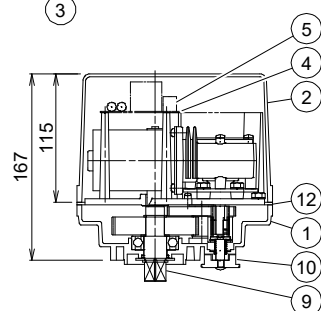
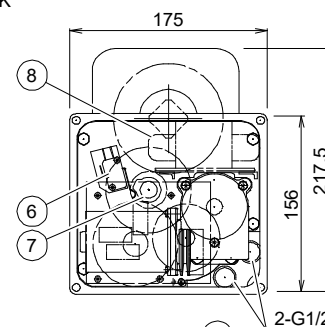
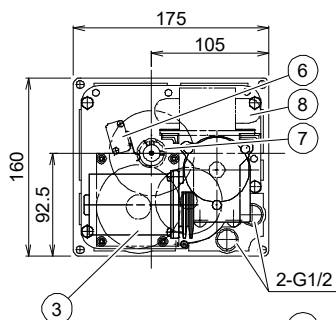
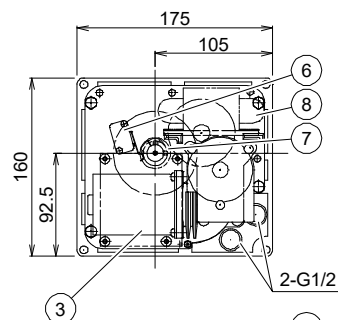
DIMENSIONS

AD, HD

AD-300, 700 HD-300, 700

HD-02K

HD-06K



Parts name

1	Body	6	Limit switch	11	Manual shaft (For 06K)
2	Motor cover	7	SW setting cam	12	Rubber packing
3	Motor	8	Transformer		
4	Control board	9	Drive shaft		
5	Terminal block	10	Manual clutch		

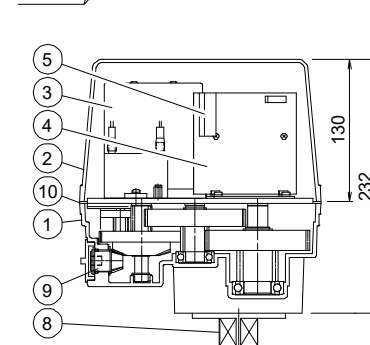
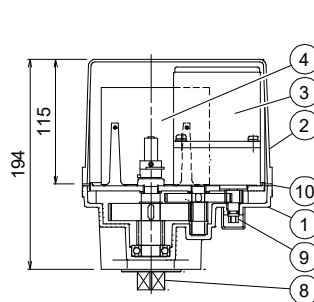
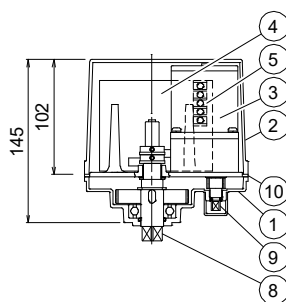
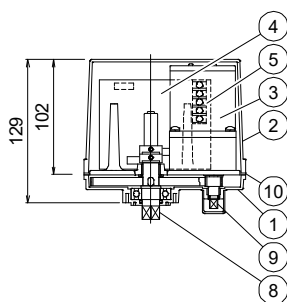
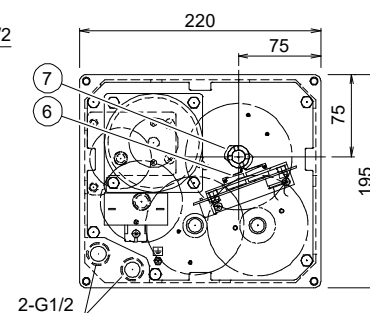
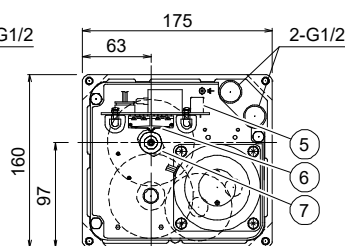
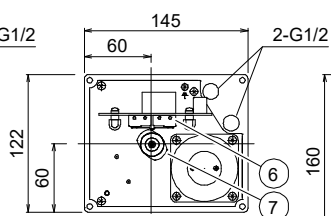
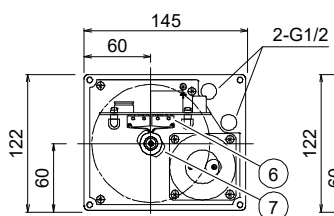
AE

AE-120, 300, 360

AE-600, 700

AE-02K

AE-06K



Parts name

1	Body	5	Terminal block	9	Manual shaft
2	Motor cover	6	Limit switch	10	Rubber packing
3	Motor	7	SW setting cam		
4	Control board	8	Drive shaft		

INSTALLATION, OPERATION & MAINTENANCE INSTRUCTIONS

HANDLING & STORAGE

①HANDLING

Do not drop or throw the product as it may break.

②STORAGE

- Store away from dust, moisture and direct sunlight. If possible, store in the original package.
- Do not remove a dust proof cap until the piping.

③CHECKING

- Check the product code, power supply, and voltage before installation.
- Make sure that the bolts are not loose.

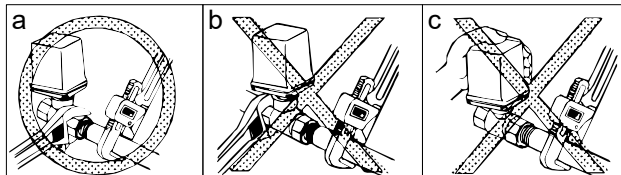
INSTALLATION

①PRECAUTIONS

- Flush the pipeline carefully before installing the valve. Foreign particles, such as sand or pieces of welding electrode, will damage the ball and seats.
- For valves with ST / SC option, check the arrows on the product before piping.

②PIPING

- Using a pipe with too long a thread will damage the valve.
- If sealing tape or sealant gets inside the valve, the valve seat leaks or malfunctions.
- To prevent the valve from being damaged by stress, always hang a wrench on the end of the valve on the side where the pipe is to be connected when screwing in the pipe or when unscrewing it after correcting the angle (Fig a and b) and do not use a pipe wrench on the valve. Do not apply force to the actuator when working on the piping. (Fig. c)



- Refer to the recommended tightening torque table and do not apply excessive torque.

Valve size [mm]	Torque [N·m]
008 to 010	15 to 20
015	25 to 35
020	40 to 50
025	50 to 60
032	60 to 80
040	75 to 85
050	90 to 110

③ENVIRONMENT

- Do not install in place where corrosive gas is present or where vibration is heavy (0.5 G or more).
- When radiant heat causes the surface temperature of the control unit to exceed 55 °C, provide an appropriate shielding plate.
- If there is a possibility that the fluid and drive part freeze, please take measures to prevent freezing.

④POSITIONING

Should be positioned through 90° upward from horizontal. Provide space around the product to allow manual operation, inspection and replacement work.

Maintenance space for upper part of actuator.

AE (120 / 360 / 700)	More than 105 mm
AE (02K / 06K) AD HD	More than 120 mm

⑤OTHER NOTES

Until the wiring is completed there must be no condensation or flooding in the interior of the actuator, after piping. Protective caps on the cable gland are not waterproof.

INSTALLATION, OPERATION & MAINTENANCE INSTRUCTIONS**WIRING****①PRECAUTIONS**

- Remove the actuator cover before wiring.
- Two G1/2 electrical connections are provided with a cable gland and plug. Usable cable size is $\Phi 6$ to 12 mm.
- When using a flexible tube, dew condensation may occur inside the actuator due to respiration from the inside of the tube and malfunction may result. Seal the flexible tube connector part with a sealant.
- Sealants that affect the electrical contacts should not be used inside the electric actuator.
- If long distance wiring or low voltage operation, check that terminal voltage is in the proper range.

②CONNECTION

- Do not wiring outdoors on a rainy day.
- Check the power supply and voltage.
Connect the signal as shown in the wiring diagram.
Do not connect unnecessarily terminal.
- Actuator should be electrically grounded.
Use the terminal marked (\equiv) inside the actuator.

PREVENT DEW CONDENSATION

- When installing the cover after wiring, perform the bolt by the temporary tightening procedure and the permanent tightening procedure to tightly and securely tighten the rubber packing so that water does not enter from the outside.
- Tighten the cable gland nut so that there is no leakage from the wire entrance.

CONTROL**①AE1**

Each control switch should be prepared one by one.
Do not operate two or more from one switch at the same time.

②AD2, HD2, AE2

When using control switch with current leakage (more than 1 mA) such as TRIAC or relay with CR, it can cause malfunction.

③DC POWER SUPPLY

- Battery or full wave rectification can be used.
- Consider an inrush current of motor.
(It is 1.5 to 3 times of consumed current.)
- When using a DC voltage, be selected the wire thickness by the wiring distance.
- Do not use power supply that require more than 1 second with rise and fall time.

④USE OF OPEN/SHUT SIGNALS

Use signals within the capacity of output signal rating.

OPERATION**①TESTING**

- Make sure that power supply voltage is correct. Also check operating position, wiring, speed and signals.
- During trial operation, check that valve movement and OPEN and SHUT signals are correct.

②DUTY CYCLE

Confirm that the operation frequency is within the specified duty cycle.

Use beyond the load time rate range will affect product life. Also, it may cause burnout.

Duty cycle is a value that regulates the opening / closing frequency of the actuator. The meaning of 20 % 15 minutes for Duty cycle is that 3 minutes (20 % of 15 minutes) operation is possible. The calculated value obtained by dividing 3 minutes by the operation time is the number of times of operation within 15 minutes.

③ATTENTION

- Keep power supplied for built-in space heater to prevent condensation inside actuator.
- Do not touch the moving parts of actuator in operation.
- Do not insert a reverse signal during operation.
It may shorten the life of product.
- Never put anything on the actuator or make it into a foothold.

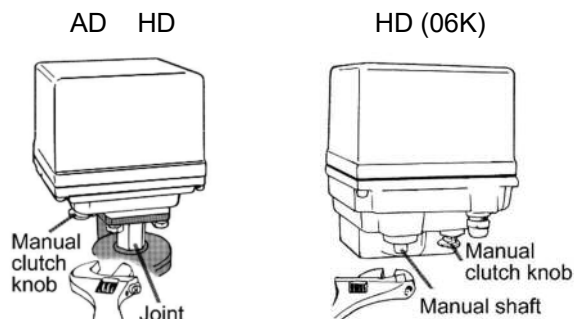
INSTALLATION, OPERATION & MAINTENANCE INSTRUCTIONS

MANUAL OPERATION

①PRECAUTIONS

- Be sure to turn off the power before manual operation.
- Operate manually with reference to the opening degree label. Do not turn beyond the fully open / fully closed position. Operation failure may occur during automatic operation.

②THE WAY OF OPERATION

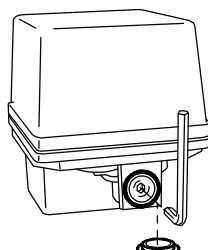


Manual operation can be possible by pulling down manual clutch knob. Set the knob to manual position and operate the joint by using an adjustable wrench in the SHUT/OPEN direction. When it becomes in the position besides the range of operation in the case of manual operation, it may stopped automatic moving. In case the manual clutch knob is not easy to pull down, try moving joint or manual shaft to the opposite direction by wrench. For automatic operation, reset the knob to automatic position. Be sure to confirm that knob is reset completely.



Turn manual shaft slowly with an adjustable wrench.

AE (06K)



Remove the cap. Turn manual shaft solely with M8 hexagon socket screw keys.

MAINTENANCE

- To prevent electric shock, be sure to turn off the power when removing the actuator cover.
- Do the routine maintenance at least once in half a year.

Inspection items

- Confirm operation of opening and closing.
- Confirm that an actuator is not hot excessively.
- Confirm existence of abnormal noise and vibration during operation.
- Confirm whether screws are loose or not.
- Confirm that water or condensation no remains in the actuator.
- Confirm the fluid temperature or pressure.
- Confirm the leak from valve stem.

Before automatic operation, be sure to remove wrench.

INSTALLATION, OPERATION & MAINTENANCE INSTRUCTIONS**TROUBLE SHOOTING**

Problem	Cause	Solution
Actuator does not move.	Faulty wiring.	Correct the wiring.
	No voltage is coming.	Check the voltage.
	Incorrect voltage.	When it's burned out by excess voltage, replace the actuator.
	Short the circuit, contact failure.	Review wires and connection.
	Motor is too old.	Replace the actuator. Repair in our factory.
Operation is unstable.	Excess surge or voltage was applied.	<ul style="list-style-type: none"> • Replace the control board or limit switch. (Repair in our factory) • Replace the actuator.
	Rainwater entered the actuator.	<ul style="list-style-type: none"> • Dry the inside. • Replace the actuator.
	Added high harmonics noise from an inverter.	Attachment a filter for each inverter maker option.
	Effect of high level noise.	Use the shielded wire and ground the wiring. Separate signal wire from power line.
	Two or more valves operated by the same switch. AE1	Each control switch should be prepared one by one.
	Switch leakage current is large. AD2 HD2 AE2	Current leakage should be less than 1 mA.

Problem	Cause	Solution
Stop in the mid position.	<ul style="list-style-type: none"> • Biting of valve seat. • The scale has adhered to the valve ball. 	Remove a foreign object.
		Clean or replace valve parts. MS MH
	Overload protector runs because of over-torque.	Turn off the power for about 3 minutes to remove a heat from motor protection circuit. AD1 HD1 AE1
		Motor protection circuit returns by the signal of operation of an opposite direction. Turn on the power again. AD2 HD2 AE2 AD0 HD0
Received the alarm signal. AD2 HD2 AE2		
Stop automatic moving after manual operation. AD HD	Manual clutch knob is not reset.	Reset manual clutch knob.
	Out of operating range. (06K)	Reset by manual operation.
Leakage from valve body	<ul style="list-style-type: none"> • Valve cap get loose. • Valve body is damaged. 	Replace the valve.
Leakage from valve seat	Seat is worn or damaged.	Replace the valve.
		Replace the valve seat. MS MH
Leakage from valve stem	Stem packing is worn or distorted.	Replace the valve.
		Replace the packing. MS
		Replace the o-ring. MH

For more information contact
NIPPON VALVE CONTROLS, INC. for consultation.